

WHAT IS CLAIMED IS:

CLAIMS

1. An apparatus for charging a battery comprising
a charging circuit for providing a charging current to the battery;
a temperature sensor positioned to sense a temperature of said battery; and
a controller coupled to said temperature sensor and said charging circuit and
5 operable to control said charging circuit in accordance with said temperature.
2. The apparatus of Claim 1 wherein said controller continuously sets
said charging current in accordance with said temperature.
3. The apparatus of Claim 1 wherein said controller periodically sets said
charging current in accordance said temperature.
4. The apparatus of Claim 1 further comprising a memory coupled to said
controller having a temperature and charging current look up table stored therein, and
wherein said controller accesses said look up table to set said charging current.
5. The apparatus of Claim 1 wherein said controller is operable to set said
charging current to a maximum value when said temperature is lower than a first
predetermined threshold value.

6. The apparatus of Claim 5 wherein said maximum value is the battery's maximum specified charging current, and said first predetermined threshold value is the battery's maximum charging temperature.

7. The apparatus of Claim 1 wherein said controller is operable to set said charging current to zero when said temperature is higher than a second predetermined threshold value.

8. The apparatus of Claim 1 wherein the battery is coupled to a load, and wherein said temperature sensor senses that temperature of the battery and the load.

9. An apparatus for exercising a battery, comprising
a charging circuit having a charging current output coupled to the battery;
a temperature sensor positioned to sense a temperature related to the battery temperature;
5 a discharging circuit having a discharging current input coupled to the battery;
and
a controller coupled to said temperature sensor, said charging circuit, and said discharging circuit, said controller operable to set said charging current in accordance with said temperature, and operable to set said discharging current in accordance
10 with said temperature.

10. The apparatus of Claim 9 and wherein said controller continuously sets said discharging current in accordance with said temperature.

11. The apparatus of Claim 9 and wherein said controller periodically sets said discharging current in accordance said temperature.

12. The apparatus of Claim 9 further comprising a memory coupled to said controller having a temperature versus discharging current look up table stored therein, and wherein said controller accesses said look up table to set said discharging current.

13. The apparatus of Claim 12 and wherein said discharging circuit comprises a variable impedance load and wherein said look up table values correspond to values of said variable impedance load.

14. The apparatus of Claim 9 and wherein said controller is operable to set said discharging current to a maximum value when said temperature is lower than a first predetermined threshold value.

15. The apparatus of Claim 14 and wherein said maximum value is the battery's maximum specified discharging current, and said first predetermined threshold value is the battery's maximum discharging temperature.

16. The apparatus of Claim 9 and wherein said controller is operable to set said discharging current to zero when said temperature is higher than a second predetermined threshold value.

17. The apparatus of Claim 9 wherein said temperature sensor senses the temperature of the battery and said discharging circuit.

18. A method of charging a battery, comprising the steps of:
sensing a temperature related to the battery temperature;
setting a charging current in accordance with said sensed temperature; and
charging the battery at said charging current.

19. The method of Claim 18 and wherein said sensing and setting steps are repeated continuously during said charging step.

20. The method of Claim 18 and wherein said sensing and setting steps are repeated periodically during said charging step

21. The method of Claim 18 and wherein said setting step further comprises the step of recalling a charging current corresponding to said sensed temperature from a look up table.

22. The method of Claim 18 and wherein set setting step includes setting said charging current to a maximum value if said temperature is lower than a first predetermined threshold.

23. The method of Claim 22 and wherein said maximum value is the battery's maximum specified charging current, and said first predetermined threshold is the battery's maximum charging temperature.

24. The method of Claim 18 and wherein said setting step includes setting said charging current to zero when said temperature is higher than a second predetermined threshold value.

25. The method of Claim 18 wherein the battery is coupled to a load, and wherein said sensing step includes sensing the temperature of the battery and the load.

26. A method of exercising a battery, comprising the steps of:
sensing a temperature related to the battery temperature;
setting a discharging current in accordance with said temperature;

discharging the battery at said discharging current;
5 discontinuing said discharging step when a predetermined battery voltage is reached;
setting a charging current in accordance with said temperature; and
charging the battery at said charging current.

27. The method of Claim 26 and wherein said sensing and setting a discharge current steps are repeated continuously during said discharging step.

28. The method of Claim 26 and wherein said sensing and setting a discharge current steps are repeated periodically during said discharging step.

29. The method of Claim 26 and wherein said setting step further comprises the step of recalling a discharging current corresponding to said sensed temperature from a look up table.

30. The method of Claim 26 and wherein said setting step includes setting said discharging current to a maximum value if said temperature is lower than a first predetermined threshold.

31. The method of Claim 30 and wherein said maximum value is the battery's maximum specified discharging current, and said first predetermined threshold is the battery's maximum discharging temperature.

32. The method of Claim 26 and wherein said setting step includes setting said discharging current to zero when said temperature is higher than a second predetermined threshold value.

33. The method of Claim 26 wherein the battery is coupled to a load, and wherein said sensing step includes sensing the temperature of the battery and the load.